DRAWING AMENDMENTS

Please replace FIGS. 2A and 3 with the revised FIGS. 2A and 3 shown in the Replacement Drawing Sheets enclosed with this response.

REMARKS

Claims 1 – 7 are pending. Claims 1 – 4 are rejected, and claims 5 – 7 are allowed.

The applicant's attorney amends claims 1, 2 and 4, and adds claim 8. Claims 2 and 4 have been amended not to overcome the examiner's rejection, but to more clearly recite an aspect of the applicants' invention. These amendments do not narrow the claims. The applicant's attorney respectfully asserts that claims 1 – 4, as amended, are in condition for allowance for the reasons discussed below.

Objection to the Drawings and Specification

The applicants' attorney has amended paragraph 18 and FIGS. 2A and 3 to overcome the examiner's objection to the drawings and specification. Paragraph 18 has been amended to correctly spell "winding". Figure 2A has been amended, as shown in the Replacement Drawing Sheet, to include the reference letter d to indicate the predetermined distance between the reels 15 and 16. Figure 3 has been amended, as shown in the Replacement Drawing Sheet, to delete the word "center" and the lead line extending from it toward the layered fiber. Annotated Marked-Up Drawing Sheets are also enclosed with this response to clearly show the changes (circled and in red ink) made to the original FIGS. 2A and 3.

No new matter has been added to the application with these amendments to the specification and figures.

Rejection of claims 1 – 4 under 35 U.S.C. §103(a)

The applicants' attorney respectfully asserts that claim 1 is patentable over U.S. Patents 5,301,884 issued to Horneman (Horneman) and 3,667,203 issued to Koschatzky *et al.* (Koschatzky) because each fails to disclose a second reel spaced apart from a first reel by a predetermined interval when both reels are mounted on respective winding disks that rotate independent of each other.

The applicants' claim 1, as amended, recites an apparatus for winding a fiber about a spool. The apparatus includes a center shaft that the spool can slide along, a first winding disk adapted to rotate about the center shaft, a second winding disk adapted to also rotate about the center shaft, a first reel mounted on the first winding disk and holding half of the fiber to be wound onto the spool, and a second reel mounted on the second winding disk and spaced apart from the first reel by a predetermined interval when both reels are mounted on their respective winding disks. The second reel holds the other half of the fiber to be wound onto the spool. The apparatus also includes driving mechanisms to wind the first disk about the center axis to rotate the first reel about the spool and wind fiber onto the spool for about the predetermined interval, and then to wind the second disk about the center axis to rotate the second reel about the spool and wind fiber onto the spool.

For example, as shown in FIGS. 2A – 2C and discussed on pages 8 – 10 of the specification, an apparatus for winding fiber about a spool includes a spool 11 mounted to a center shaft 10, a first winding disk 13 that can rotate about the center shaft 10, and a second winding disk 14 that can also rotate about the center shaft 10. The apparatus also includes a first reel 15 mounted to the first disk 13, and a second reel 16 mounted to the second disk 14 and spaced apart from the first reel by a predetermined distance "d". To wind fiber onto the spool 11, the spool slides along the center shaft 10 as each of the disks 13 and 14 rotates about the center shaft 10 to rotate each of the reels 15 and 16 about the spool 11. When the apparatus begins to place fiber onto the spool 11 (FIG. 2A), the disk 13 rotates around the center shaft 10 as the spool 11 slides along the shaft 10, and the other the disk 14 does not rotate about the shaft 10. Thus, fiber from the first reel 15 is placed on the spool 11. After the spool 11 slides the distance "d" along the shaft 10 (FIG. 2B), the second disk 14 rotates around the shaft 10 as the spool 11 continues to slide and as the first disk 13 continues to rotate about the shaft 10. Thus, two layers of fiber are placed on the spool simultaneously.

In contrast, Horneman fails to disclose a second reel spaced apart from a first reel by a predetermined interval when both reels are mounted on respective winding disks that rotate independent of each other. Horneman discloses a fiber winding maching 20 that includes a spool 40 fixed between a right-hand section 22A (FIG. 1A)

and a left-hand section 22B (FIG. 1B). Each of the sections 22A and 22B includes a shaft, 47A and 47B respectively, having an end that the spool is mounted to, and a winding head, 34A and 34B respectively, that places fiber onto the spool 40 by rotating around the spool and moving relative to the spool 40 in a direction along the shaft's length. Each winding head 34A and 34B includes a guide, 170A and 170B respectively, and a supply spool, 39A and 39B respectively. When the machine 20 begins to place fiber on the spool 40, both guides 170A and 170B are adjacent each other and one of the winding heads, 34A for example, rotates about the spool 40 and moves away from the other winding head 34B. Thus, the distance between the supply spools 39A and 39B increases. Likewise, when the guide 170A reaches the end of the spool 40, the winding head 34A stops and waits for the guide 170B to catch up. Thus, the distance between the supply spools 39A and 39B decreases as this occurs. Therefore, unlike the applicants' claimed apparatus, Horneman's supply spools 39A and 39B are not spaced apart from each other a predetermined distance.

Koschatzky also fails to disclose a second reel spaced apart from a first reel by a predetermined interval when both reels are mounted on respective winding disks that rotate independent of each other. Koschatzky discloses a winding machine A for covering a polymer hose with reinforcing threads. The machine A includes a hollow shaft 3 through which the hose is pulled, and disks 10 that are keyed to the shaft and rotate about the hose as the hose is pulled through the shaft 3. The disks 10 hold bobbins of thread that is wound onto the hose as the disks rotate and the hose travels through the shaft 3. The disks 10 all rotate at the same speed and at the same times. They do not rotate independently. Therefore, unlike the applicants' claimed apparatus, Koschatzky's machine does not include winding disks that rotate independent of each other.

Claims 2 – 4 are patentable by virtue of their dependencies on claim 1, as amended.

Conclusion

The applicants' attorney respectfully requests the examiner withdraw the rejection of claims 1 – 4 and issue an allowance for claims 1 – 8.

Should any additional fees be required, please charge them to Deposit Account No. 07-1897.

If, after considering this response, the examiner believes claims 1 – 4 should not be allowed, the applicants' attorney respectfully requests that before issuing an Office Action, the examiner call to schedule a telephone conference to further the prosecution of the claims.

DATED this 23rd day of December 2005.

Respectfully submitted,

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FIG. 1

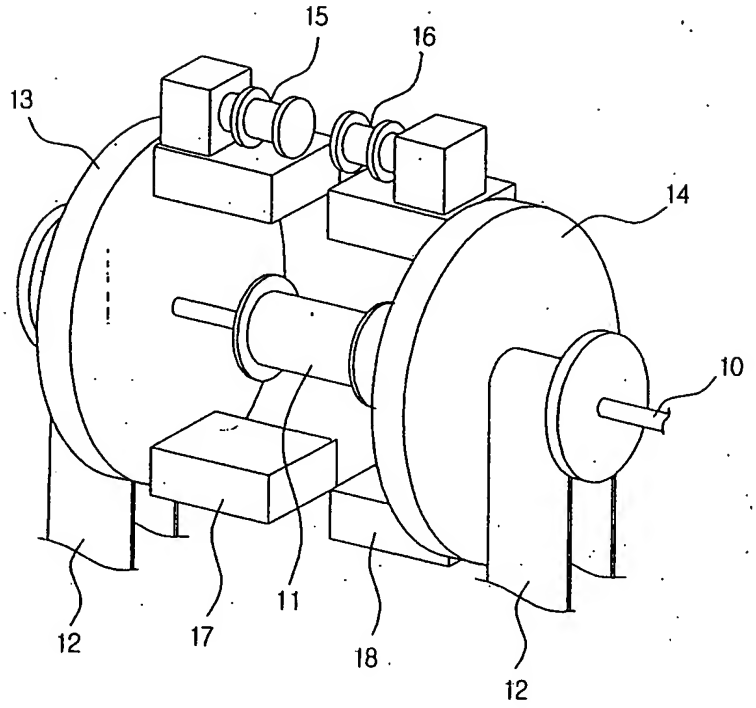

FIG. 2A

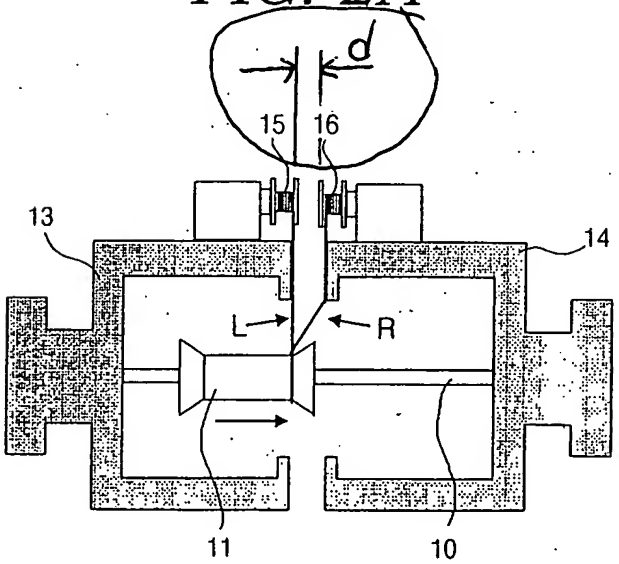

FIG. 2D

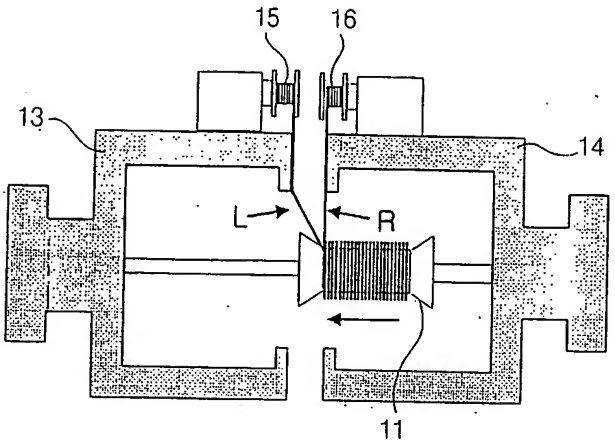
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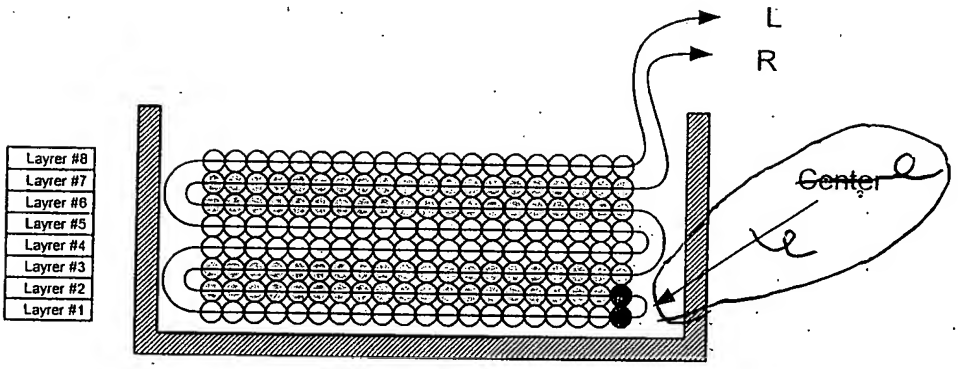
FIG. 3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